

SERIES 05 - 07

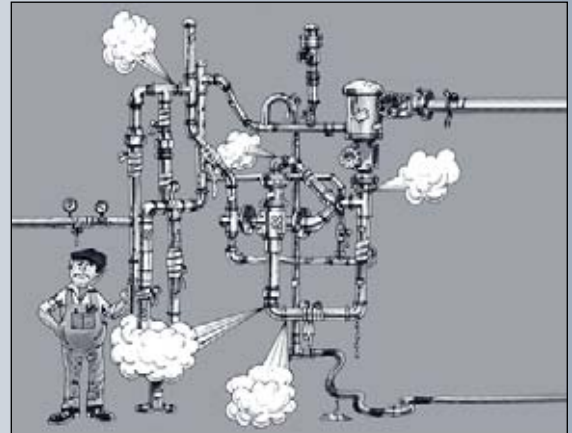
DESIGNING AN EFFICIENT COMPRESSED AIR DISTRIBUTION NETWORK

The main source of inefficiencies and problems affecting compressed air distribution systems is often the distribution plan of the system itself.

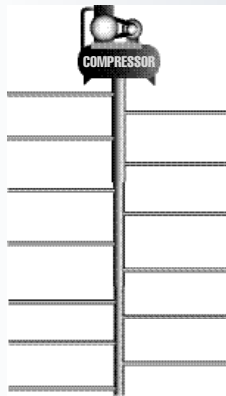
The majority of problems therefore usually occur somewhere between the compressor and the application points.

Most systems are usually of either of two types:

- Dead-end network
 - Octopus network
- ...neither of which provides the best results...



DEAD-END NETWORK



CONVENTIONAL NETWORK

In a dead-end network, air flow must be sacrificed (quantity of air per minute) in order to preserve a uniform pressure at the point of use. The progressive reduction of the central pipe while it moves away from the compressor maintains pressure.

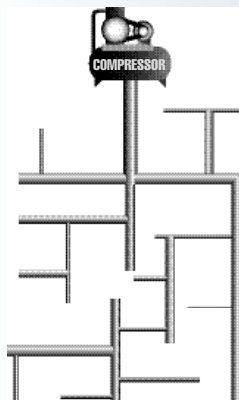
However, air tools and equipment must be placed along the length of the circuit in decreasing order of consumption (SCFM).

The equipment using the most air flow must be located near the compressor, and that using less, further away.

This generates major handling problems, as production processes are not necessarily designed this way.

This is not the optimum network design.

OCTOPUS NETWORK



OCTOPUS NETWORK

A network where each additional line and extension does not necessarily match the initial configuration is often called an "octopus" network. Dead-end networks often evolve into octopus networks over time.

The octopus network includes the following anomalies:

- Different airline materials
- Curves, reductions and enlargements without apparent reason
- Inconsistent diameters of air lines
- Installation done with no knowledge of pneumatic standards

Predicting what flow and pressure are available at any point is virtually impossible. Air flow fluctuations from varying usage of pneumatic equipment and air tools makes it even more difficult to get the right pressure and flow at any given point.

This results in varying pressure and air flow conditions throughout the system, creating many problems.

This type of network, while quite common, is the worst possible situation.